SPAWARINST 5100.15
SPAWAR OOF
7 January 1993

SPAWARINST 5100.15

From: Commander, Space and Naval Warfare Systems Command

Subj: NAVY OCCUPATIONAL SAFETY AND HEALTH (NAVOSH) PROGRAM FOR SPACE AND NAVAL WARFARE SYSTEMS COMMAND (SPAWAR)

Ref: (a) Code of Federal Regulations, Title 29, Occupational Safety and Health Administration (OSHA) Standards
(b) OPNAVINST 5100.23C, NAVOSH Program Manual
(c) NAVOSH Oversight Inspection Unit (OIU) Checklist
(d) SPAWARINST 5100.8 Series
(e) Code of Federal Regulations, Title 41, Federal Property Management Regulations
(f) OPNAVINST 5102.1 Series, Mishap Investigating and Reporting
(g) OPNAVINST 4110.2, Hazardous Materials Control
(h) OPNAVINST 5100.19 Series, NAVOSH Program Manual, Forces Afloat
(i) NAVFACINST 11320.22D Shore Activities Fire Protection Program
(j) SPAWARINST 5100.14C, SPAWAR Tobacco Use Prevention
(k) OPNAVINST 5090.1A, Environmental and Natural Resources Program Material

End: (1) Video Display Terminals (VDT)
(2) Tobacco Smoking Control For SPAWAR Activities
(3) Safety Reference Material

1. Purpose. To ensure the occupational safety and health of all civilian and military personnel at SPAWAR and activities as required by references (a) and (b).

2. Cancellation. SPAWARINST 5100.9C is cancelled.

3. Background. References (a) and (b) provide the detailed requirements to ensure occupational safety and health (OSH) for the Navy ashore. Reference (c) is the Navy IG checklist to determine activity OSH compliance and is a useful tool in self evaluation. Additional safety regulations and reference documents are provided in enclosures (1) through (3).

4. Scope. This directive is applicable to all military and civilian personnel employed by SPAWAR, its activities and their workplaces worldwide.

5. Policy. Commander, Space and Naval Warfare Systems Command (COMSPAWARSYSCOM) reaffirms and supports the policy of reference (b) to provide a safe and healthful workplace for all personnel. Priority shall be given to allocation of resources to

correct hazardous conditions. SPAWAR and its activities shall comply with references (a) through (k), enclosures (1) and (2), and the applicable regulations in enclosure (3).

6. Responsibilities. Responsibility for safety is vested in the Commander and subordinate Commanding Officers by U. S. Navy regulations. The following responsibilities are assigned:

a. SPAWAR 00F/223-2 (Safety Office) shall administer the SPAWAR Occupational Safety and Health Program, developing OSH policy and technical direction as set forth in reference (b). The assignment of this and other safety program responsibilities in SPAWAR is provided in reference (d).

b. SPAWAR 08-5 (Administrative Services) shall implement this instruction for SPAWAR employees as follows:

(1) Initiate corrective actions for identified hazards at SPAWAR. Utilize the services of Washington Headquarters Service (WHS) to assess safety and health hazards and assign Risk Assessment Codes (RAC) for identified hazards. Provide for correction of all occupational safety and health hazards at SPAWAR and inform the Safety Office of corrective actions taken. Assist GSA in maintaining a deficiency abatement plan for correction of all hazards which are not resolved in 30 days per references (b) and (e). Submit copies of this deficiency abatement plan to SPAWAR 00 via SPAWAR OOF every six months for review.

(2) Record and follow-up on all hazard reports until the hazards are corrected. Send status reports to the hazard report originator as required by reference (b). Provide copies of hazard report resolution and records to SPAWAR 223-2.

(3) In conjunction with WHS and SPAWAR safety coordinators, conduct the annual OSH inspection of SPAWAR.

(4) Ensure that SPAWAR occupational injuries and illnesses are recorded and reported to the Naval Safety Center in accordance with reference (f). Assist supervisors in preparing accident investigation reports for all injuries resulting in five or more lost workdays. Forward these reports to the Naval Safety Center.

(5) Provide bulletin boards and display safety materials for promotion of occupational safety and health program awareness at SPAWAR.

(6) With the assistance of SPAWAR 223-2 conduct safety orientation training for all new SPAWAR employees.

(7) Ensure personnel within SPAWAR 08-5 receive “safety standards” training consistent with their OSH responsibilities. Position assignments shall clearly state these

c. SPAWAR 214 (Facilities Management) shall execute planning, programming, budgeting and funding to correct OSH facilities deficiencies at SPAWAR activities. This shall include asbestos inventory control and abatement programs per reference (b). SPAWAR 214 is also responsible for management of SPAWAR activities' hazardous waste programs, compliance with the Toxic Substances Control Act and special projects for removal of PCB transformers per references (g) and (k). Advise SPAWAR 223-2~at least semi-annually of the status of all projects related to occupational safety and health.

d. SPAWAR 01 will be the focal point for all NAVOSH budget planning and programming. Annual Navy Occupational Safety and Health-(NAVOSH) cost reports per chapter 3 of reference (b) will be submitted to SPAWAR 01-6 for consolidation and submission to CNO (N-45).

e. PDs, PMWs and Directorates shall:

(1) Ensure that all their employees are provided safe and healthful workplaces per the OSHA standards.

(2) Appoint a safety coordinat9r to assist SPAWAR 08-5 and WHS in conducting the safety and health inspections of their work areas, disseminate safety information and coordinate with SPAWAR 08-5 for correction of deficiencies. Training of safety coordinators will be provided by SPAWAR 223-2. Provide copies of inspection reports/corrective action plans and names, codes and phone numbers of safety coordinators to SPAWAR 223-2-.

(3) If assigned as a tenant to another Navy activity, ensure that the. host tenant agreement assigns host responsibility for all safety services required by reference (b), including safety orientation, training and deficiency abatement. Appoint a safety coordinator to the host safety office. Provide SPAWAR 223-2 with a copy of the "Safety Services" section from the host-tenant agreement.

f. SPAWAR 91 is the safety manager for the Naval Command Control and Ocean Surveillance Center (NCCOSC). SPAWAR OOF/223-2 will provide safety guidance and oversight of NCCOSC activities with the concurrence of SPAWAR 91.

g. COMSPAWARSYSCOM Activities

(1) Commanding Officers of Echelon 3 and Echelon 4 activities shall fulfill the responsibilities established in reference (b). They shall appoint a full time OSH Manager to administer their occupational safety and health program. To assure the highest level of attention,

each Occupational Safety and Health (OSH) Manager shall report directly to the Commanding Officer. The OSH manager shall meet a minimum of once a month with the Commanding Officer in order to keep the Commanding Officer totally informed of Safety and Health related matters.

(2) OSH managers shall be of a grade at least equivalent of a branch head. Collateral duty safety assignments shall be included in the individual's position description and the position shall be reclassified as appropriate to account for the additional responsibilities. See reference (b) for minimum organization, staffing and functions of the safety office. Copies of personnel actions or other documentation of assignment to safety duties shall be retained on file for SPAWAR evaluation.

(3) To further emphasize Command attention, Commanding Officers shall personally conduct periodic "walk through" safety inspections of various activity's workplaces together with the OSH manager. The facilities manager and workplace supervisor should be included. These "walk through" inspections shall be representative of the total base facilities.

(4) Notify SPAWAR 223-2 of any safety deficiencies beyond the capability of the activity to correct in a timely manner.

h. Supervisors (SPAWAR and Activities). As directed in reference (b), occupational safety and health of each workplace is primarily the duty of the supervisor, and shall be reflected in their performance rating. Their specific duties are:

(1) Indoctrinate each of their employees on the safety and health regulations for their specific occupation both on base and at other temporary duty assignments. This responsibility includes indoctrinating new employees prior to their work assignment. Contents of enclosures (1) through (3) as they apply to the specific organization and occupation shall also be included in the indoctrination. Special emphasis should be given to dealing with hazardous materials as directed in references (b) and (g). Maintain safety orientation and training records and send a copy of these records to the local safety office.

(2) Enforce safety and health regulations. Ensure OSH inspectors (activity safety specialists, SPAWARHQ, NAVOSH OIU or OSHA) are granted access to all workspaces. Workplace security classification does not exempt it from OSH compliance and inspections. Classified work areas will be sanitized when necessary to accommodate the OSH inspectors' security clearances.

(3) Assure current Standard Operating Procedures (SOPs) include safety and are in place when required.

(4) Provide employees with a safe working environment and the necessary safety equipment required for each task assigned.

(5) Inspect work areas for unsafe conditions and work practices. Advise employees of possible hazards and precautions to be taken.

(6) Take immediate action to correct safety and health deficiencies and unsafe work practices. In cases of potentially serious danger do not allow work to continue until final corrective action or interim safety procedures and equipment modifications are implemented.

(7) Assure that all injured personnel receive prompt medical attention.

(8) Investigate each mishap or occupational illness and submit reports to the safety office. Per reference (f) and local safety office requirements, initiate corrective actions to prevent recurrence of- the incident.

(9) Maintain contact with injured employee until employee returns to work and notify Safety Office of any death or disabling injury.

(10) Notify Safety Office of the mishap or occupational illness within twenty four hours.

i. Civilian and Military Employees (SPAWAR and Activities) shall comply with applicable safety regulations referenced or promulgated by their supervisors, local safety office and this instruction.

7. Figures 1 and 2 provide an overview of the safety process addressed in this instruction and significant requirements from reference (b).

8. Reports and Forms. - Reports and forms are those set forth in references (b), (f) and (g).

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W.H. CANTRELL
Rear Admiral, U.S. Navy

Distribution:
SPAWAR List 4

SPAWAR and NCCOSC Activities (10 copies each)
NAVELEXCEN Charleston (50 copies)
SNDL Part II

Figure 1. SPAWARHQ Safety Process Flow Chart

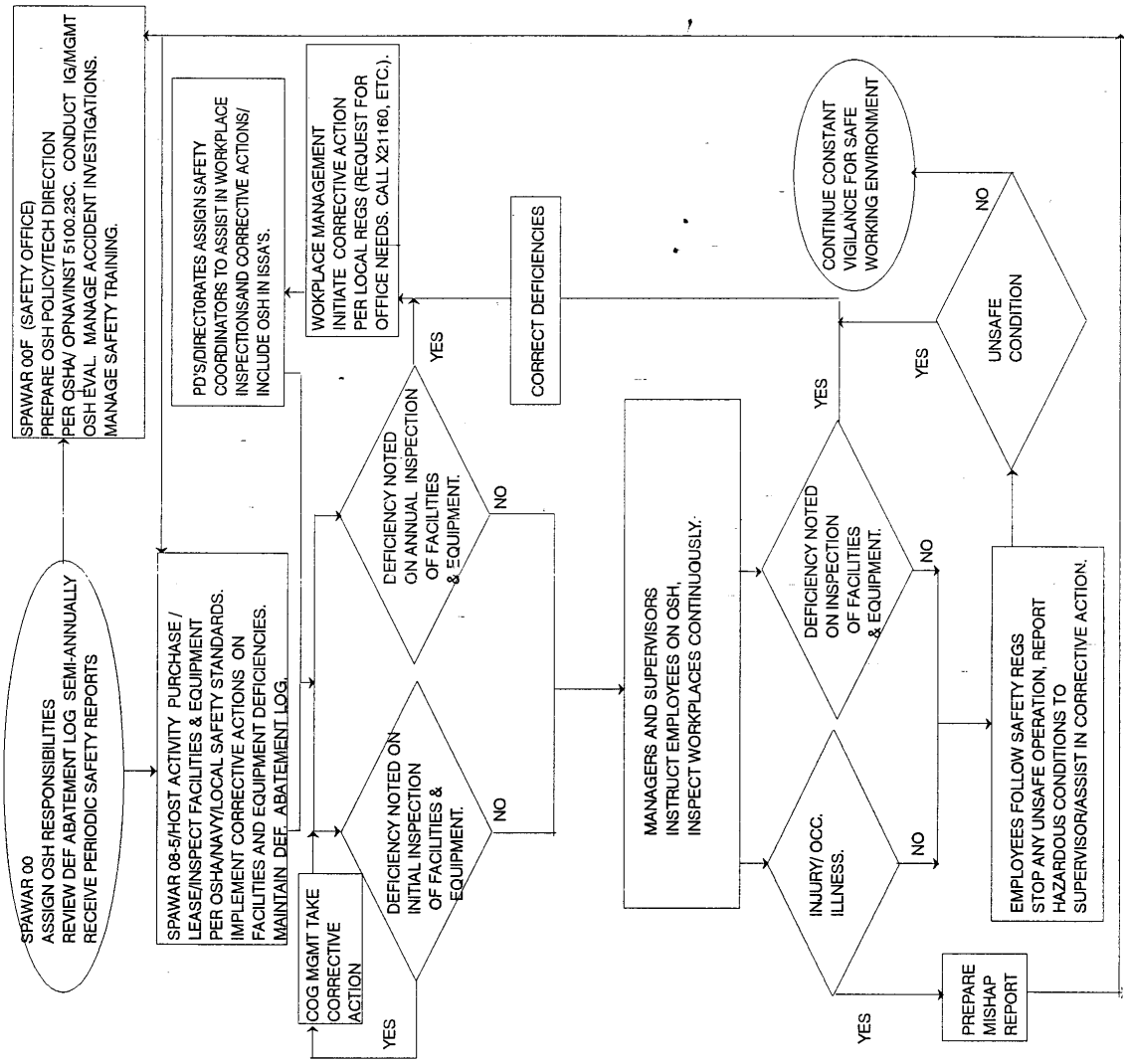
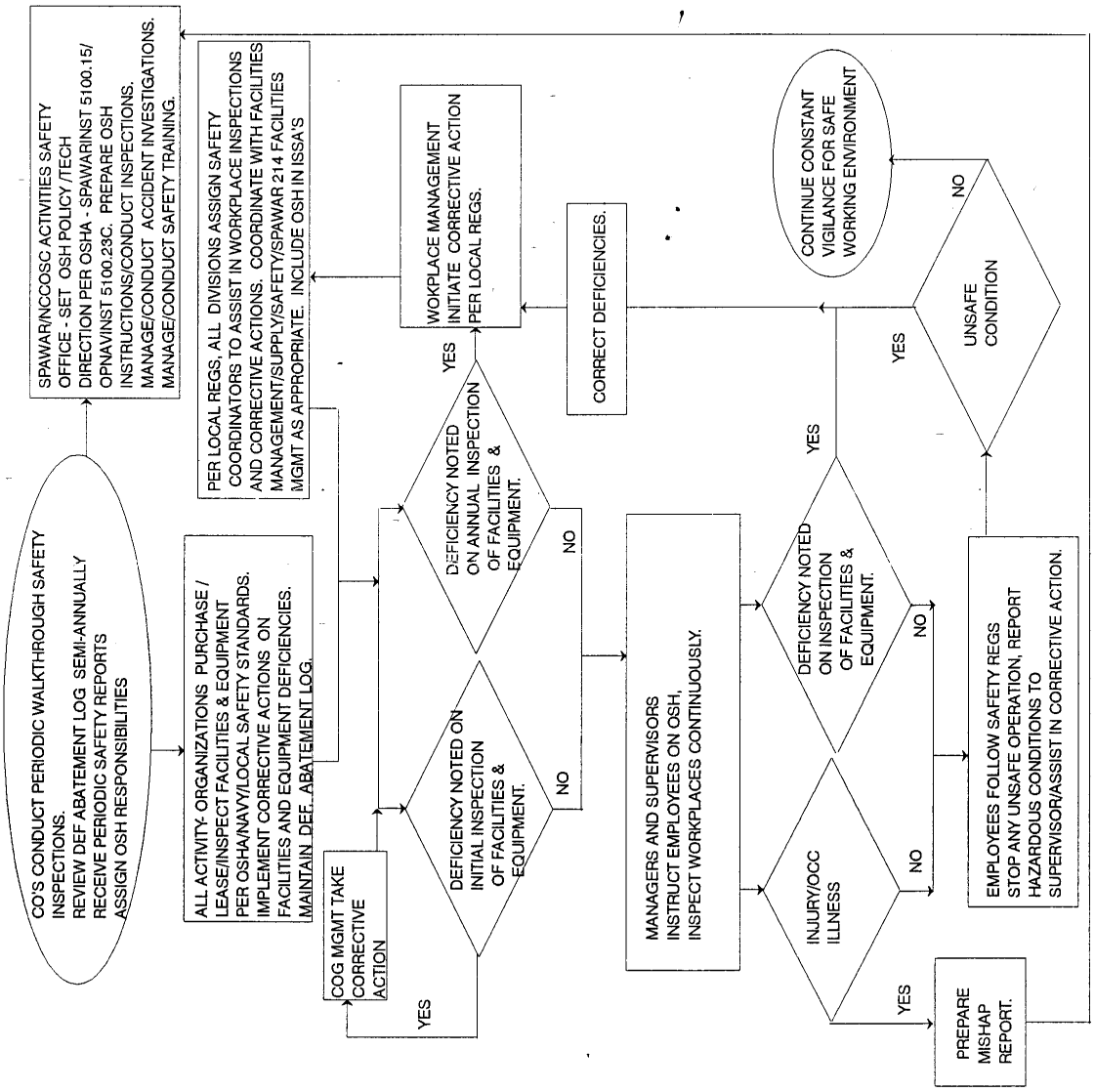


Figure 2. SPAWAR/NCCOSC Activities Safety Process Flow Chart



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VIDEO DISPLAY TERMINALS

1. Introduction. The National Institute of Occupational Safety and Health (NIOSH) has been studying the health effects of video display terminals (VDTs). The findings show that there are no radiation hazards resulting from work associated with a VDT either to the operator, or to a developing fetus. On the whole, the findings suggest that visual and musculoskeletal problems are the most frequent problems that VDT operators complain about, but these problems seem to be easily controlled with the use of ergonomic improvements. Whether long term use causes significant visual degeneration or dysfunction remains unknown. The matter requires further investigation.

2. Health Complaints and Psychological Status . The NIOSH study showed that the percentages of VDT operators and nonoperators reporting a specific health complaint were varied. The health complaints reported by a significantly higher percentage of VDT Operators than nonoperators were primarily for emotional problems including anxiety, depression, irritability, tension, and gastrointestinal problems including gas pains, acid indigestion, and tight feeling in the stomach. In addition, operators also reported a significantly higher percentage of pain or stiffness in arms or legs, swollen or painful muscles and joints, and eyestrain or sore eyes. It is quite likely that the emotional distress shown by the VDT Operators is more related to the type of work activity than the use of VDTs.

3. VDT Workstation Design and Operation Requirements- The following is a discussion of the NIOSH recommendations to relieve physical and psychological stress to VDT Operators. Values outside these ranges may be necessary based on the needs of individual Operators.

3.1. Keyboard height. Excessive keyboard height can lead to musculoskeletal fatigue due to the operator's need to keep the hands in an elevated position. NIOSH recommends nominal keyboard heights from 28.31? to 31" resulting in an angle between upper and lower arm of between 80 degrees to 120 degrees (see figure 1) and further suggests that this height be adjustable to accommodate the worker. Detachable keyboards on separate adjustable workstands will allow this adjustment.

3.2. View angle and brightness. Incorrect viewing angle can result in poor worker posture and worker fatigue. Screen height and position should be adjusted normally 10 degrees to 20 degrees below the horizontal plane of the operators eyes with the top of screen below eye level (see figure 1). Again, the one piece VDT units and the non-adjustable tables present difficulties in achieving this viewing angle. The operator should also be able to adjust screen brightness and contrast.

3.3. Viewing distance. Viewing distance is also important in minimizing visual fatigue. The optimum viewing distance is between 17.75” and 19.75" with a maximum distance of 27.5". Viewing distance should be equidistant to screen, keyboard and hardcopy.

3.4. Copy holders. All VDT workstations should be equipped with copy The copy holder will decrease the range of neck movements and visual the operator. This will minimize muscle and visual fatigue. The copy holder should be positioned near the VDT screen but also be adjustable to accommodate the job task and worker variability

3.5. Chair features. Operator chairs should be adjustable in seat pan height and backrest height and tension. Backrests should be adjustable to the lumbar region (mid-back) to provide adequate support. Arm rests may be provided on the chairs but should be removable to accommodate the worker.

3.6. Operator posture. Preferred operator posture is for the operator to be seated erect, with the thoracic region of the spine convex, the lumbar region concave, the thighs horizontal and the feet flat on the floor. Footrests should be provided where necessary to relieve pressure from the seat front on the operators' legs.

3.7. Glare. Glare can impact the operators ability to distinguish characters on the VDT screen. This can result in visual fatigue and can contribute to poor operator posture. as the operator changes position to compensate for glare. These recommendations can help to limit glare:

a. Avoid the use of high reflectance, high gloss surfaces adjacent to the VDT.

b. Drapes, shades and/or blinds over adjustment windows should be closed, especially during direct sunlight conditions.

c. The VDT screens should be properly positioned with respect to windows, overhead lighting and individual workstation lighting, so that glare sources are neither directly in front of the operators? nor reflected in the VDT screen.

d. Screen hoods may be installed to completely or partially shield the screen from reflections. Screen hoods shall not be used where they force the operator to assume an uncomfortable posture to view the screen.

e. Anti-glare filters may be installed on the VDT screen. The characteristics and effectiveness of different types of glare filters vary widely and some screen filters may have detrimental effects on image quality or contrasts. Care should, therefore, be used in filter selection.

f. Where a large number of lights are unavoidably positioned behind the operator, a combination of screen hoods and properly selected antiglare filters may decrease glare.

g. Direct lighting fixtures may need to be recessed and baffles used to cover light fixtures to prevent the light fixtures from acting as a glare source. Special covers may also be used on light fixtures to direct the light downward rather than allowing the light to diffuse.

h. Properly installed indirect lighting systems will limit the light fixtures' potential as glare sources.

3.8. Display and Hardcopy Legibility. While display and hardcopy legibility are also dependent on illumination and glare there are some other specific deficiencies that can affect operator visual fatigue.

a. Tube flicker, character jitter and character blurring can produce visual blurring as a result of continuous refocusing by the operator. These problems should prompt maintenance efforts immediately.

b. Smudges and fingerprints on the VDT screen can degrade display legibility. The VDT screens should be cleaned as needed.

c. Because of the previously recommended compromise in illumination levels, hard copy used in VDT work areas should be of particularly high quality.

3.9. Work Rest Regimens Based upon the concern about potential chronic effects on the visual and musculature system and prolonged psychological distress, NIOSH recommends the following work-rest breaks for VDT operators:

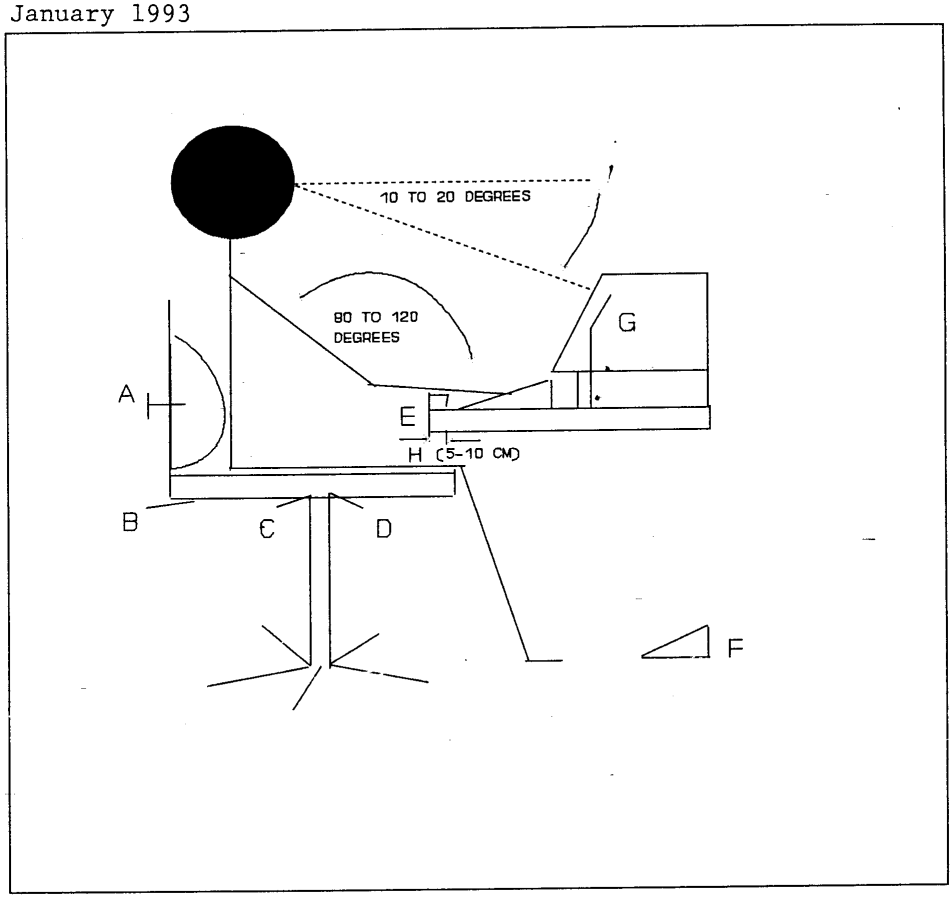
a. A 15-minute work-rest break should be taken after two hours of continuous VDT work for operators under moderate visual demands and/or moderate workload. Frequency and duration of breaks will be determined by the employee's supervisor. Guidance to supervisors will be provided by the Safety Office.

b. A 15-minute work-rest break should be taken after one hour of continuous VDT work for Operators under high visual demands, high workload and/or those engaged in repetitive work tasks.

4. Visual Acuity. NIOSH recommends that VDT operators be given a pre-placement vision examination and a periodic follow-up vision examination to detect any vision degradation.

5. Illumination. As a compromise between VDT work and hard copy tasks, NIOSH recommends illumination values of 46 footcandles (fc) to 65 footcandles measured about 10 inches from the monitor screen between operator and monitor. If illumination of greater than 65 footcandles is necessary due to special tasks, use of individual workstation illumination is recommended.

NOTE: The values in all the above paragraphs are nominal values. The workstation should be adjustable to accommodate the individual physical characteristics of the worker. The following checklist may be used to assist in verifying individual workstation compliance keeping in mind the necessity of accommodating the individual worker.



A. Adjust back rest up or down to support lower back.

B. Adjust back support spring pressure to relax back.

C. Adjust seat height to view monitor and reach keyboard without straining neck or wrists and to allow feet to touch floor without cutting off circulation to the legs.

D. Tilt seat pan forward or back to minimize strain on the tailbone.

E. Provide a wrist pad if the wrists must strain to remain suspended while typing or using a mouse.

F. Provide a foot rest if circulation to the legs is affected.

G. Copy holder must be the same distance as the monitor is from your eyes.

H. Allow a width of 5 to 10 centimeters to accommodate a wrist pad.

Figure 1. VDT Workstation and Operation Recommendations

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VDT Station Checklist

Requirement	Comply Yes/No/NA
Has the station and terminal been adjusted to fit the operator?	
Does the screen have accessible brightness & contrast controls?	
Does the station have detachable keyboard?	
Can screen position be tilted?	
Does the distance from the table to the top of the space bar measure from 2 to 3 inches?	
Does the station have an adjustable chair? (Chairs shall have adjustable heights, backrest tension & height adjustable to the lumbar (mid-back) region.)	
Is the chair adjusted so that the operator's arm is bent at an angle between 80 and 120 degrees?	
Does the station have an adjustable work table?	
Is the color of the display satisfactory with the operator? Is the station equipped with an adjustable stand for text work?	
If screen hoods or other devices are used, do they allow the operator to view the entire screen from a comfortable position?	
Is the illumination level at the station between 45fc and 65fc or 500 and 700 lux?	
If the station is located near a window, is the window equipped with a blind to reduce glare?	
Are characters on the screen clear and is the screen free of flicker or jitter?	
Is the noise level of the surrounding area low enough not to cause excessive distraction?	
Are the operator's eyes tested before he/she started the job?	
Have the operator's eyes been checked at regular 5-year intervals or 3-year intervals if operator is over 45 years of age?	
Is the terminal situated or adjusted so that the display is lower than the operator's eyes?	
Is the angle formed by the line of contact between eye and display between 15 and 30 degrees from the horizontal with the top edge of the screen no higher than operator eye level?	
Is the contrast between light characters and dark background -in the range of 3:1 and 15:1?	

VDT Station Checklist

Requirement

Is the display screen of sufficient size to allow an adequate amount of information to be displayed?_____

Is the work surface at least 35 inches wide?_____

Is the screen from 16 to 19 inches from the operator's eyes with exceptions based on the individual's needs?_____

Is there adequate room under the worktable to permit movement of operator's legs and a footrest where necessary?_____

Is the operator given a break or other less tension involving work at least every 1 or 2 hours._____

Are direct lighting fixtures recessed or if fluorescent, are there baffles to cover them?_____

Is the terminal equipped with any anti-glare devices?_____

Is there adequate space so that a wrist pad may be placed in front of the keyboard? (Wrist pads may require 2 to 4 inches between table edge and keyboard.)_____

ENCLOSURE (1)

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TOBACCO SMOKING CONTROL FOR SPAWAR ACTIVITIES

Reference: (a) SECNAVINST 5100.13A
(b) Code of Federal Regulations Title 41 Part 101-20
(c) SPAWARINST 5100.14C

1. Introduction. The negative health aspects of tobacco smoking on smokers and nonsmokers have been well documented. References (a) and (b) contain Navy and GSA requirements for tobacco smoking control and smoking cessation efforts. Reference (c) established smoking control policy for SPAWAR headquarters and prohibits smoking in all SPAWAR work spaces in the National Capital Region. These rules are enforced through the grievance process and not through the safety office.

2. Background. Reference (a) prohibits smoking in specific areas. It also states that at the initial entry and training points and at morale, welfare and recreation facilities, commands shall discourage tobacco use to the maximum extent possible by:

a. Encouraging tobacco users to stop, and non-tobacco users to continue to refrain from starting.

b. Incorporating consequences of tobacco use with education on alcohol and drug abuse.

c. Ensuring staff members do not use tobacco in the presence of students, recruits and officer candidates while in a duty status, while providing designated smoking areas for staff members who do smoke.

3. Policy. Activities are encouraged to implement a tobacco use prevention program similar to SPAWAR. As a minimum, the following policy is established for SPAWAR field activities:

a. Smoking will not be permitted in auditoriums, conference rooms, classrooms, medical care facilities, (including medical annex/dispensary and restrooms), libraries and hazardous areas. Ashtrays will not be permitted.

b. Smoking is also prohibited in elevators, official buses, vans, and shuttle vehicles.

c. Smoking will not be permitted in common work areas shared by smokers and nonsmokers. Smoking will not be allowed in private offices unless otherwise permitted by the local Commanding Officer and provided the office ventilation does not deposit second hand smoke in the general office areas. Designated smoking areas shall be established and posted for employees to take a smoke break. Outdoor prohibitions and designated smoking areas shall be

as determined necessary by each activity.

d. Supervisors will determine adequate break times for smoking employees who share common work areas with nonsmokers. Equal break time will be allowed for nonsmokers.

e. Signs shall be displayed at all entry portals and/or buildings which state in effect that all areas inside buildings are nonsmoking unless otherwise posted.

4. Social Environment. Creating a social environment that supports abstinence and discourages the use of tobacco products shall include the following:

a. Personal example by top leadership in the implementation and adherence to this instruction.

b. Training and information on the health effects of tobacco per reference (a).

SAFETY REFERENCE MATERIAL

The activity Safety Office should maintain a library of safety publications to include at least the following or the equivalent:

1. Occupational Safety and Health Administration Standards, 29 CFR. Available from the Bureau of National Affairs, Government Printing Office or Department of Labor.

2. National Safety Council, Accident Prevention Manual for Industrial Operations, Chicago.

3. National Safety Council, Fundamentals of Industrial Hygiene, Chicago.

4. National Fire Codes, available from the National Fire Protection Association.

5. Electronic Safety Handbook E0410-AA-HBK-010/OOK ELEXSAFE.

6. Hazardous Materials User's Guide, OPNAV P-45-110-91.

7. NAVSEA OP 3565/NAVAIR 16-1529/SPAWAR 0967-LP-0624-6010 Volume 1 fifth revision, Electromagnetic Radiation Hazards.

8. OPNAVINST 5100.19 series, NAVOSH Program Manual, Forces Afloat.

9. NAVSEA 0967-LP-OO-O1O0, Electronic Installation Maintenance Book, Section 3.

10. Sax, Irving N., Dangerous Properties of Industrial Materials, Reinholt, New York.

11. Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment, with Intended Changes, latest edition, American Conference Governmental Industrial Hygienists, Cincinnati, OH.

12. ASTM Standard D3698, Vapor Degreasers.

13. ASTM STP 310A, Handbook of Vapor Degreasing.

14. SPAWARINST 5100.8 series, SPAWAR Safety Program and all instructions listed therein.

15. NAVSEA Technical Manual 59310-AQ-SAF-010, Lithium Batteries.

16. All NAVMEDCOMINST 647oseries and selected 6260 series.

17. OPNAVINST 5102.1 series, Accident Investigation and Reporting.

18. NAVSEA Technical Manual, 50420-AA-RAD-010, Radioactive Materials Control.

19. NAVMED P-5055 Radiation Health and Protection Manual.

20. DOD Manual 6050.5-M, DOD Hazardous Materials Information System.

21. Hazardous Materials Information System (HMIS) on CD-ROM.

22. SPAWARINST 5100.12 Series, Navy Laser Hazards Prevention Program.

23. SECNAVINST 5100.14 Series, Military Exempt Lasers.

24. OPNAVINST 5090.IA, Environmental and Natural Resources Program Manual.

25. NAVSEA 56470-AA-SAF-010 U.S. Navy Gas Free Engineering Program, -Technical Manual.

26. Handbook of Compressed Gases, Compressed Gas Association Inc., NY, NY, Reinhold Publishing Corp., NY

27. Fire Protection Guide On Hazardous Materials, Current Edition, National Fire Protection Association, Boston, MA

28. Fire Protection Handbook, G.P.McKinnon, K. Tower, Ed.; National Fire Protection Association, Boston, MA

29. SECNAVINST 5100.13 Series, Tobacco Prevention Program.

30. SPAWARINST 5100~9D, Shore Electronics Safety Precautions

31. SPAWARINST 4110.1, Hazardous Materials Control and Management.

32. Military Handbook 1008, Fire Protection.

33. Chemistry Dictionary, Van Nostrand.

34. Industrial Ventilation, American Council of Governmental Industrial Hygienists.

35. Threshold Limit Values and Biological Exposure Indices, American Council of Governmental Industrial Hygienists.

36. OPNAVINST 5100.23Cs, NAVOSH Program Manual.

37. OPNAVINST 11320.23D Shore Activities Fire Prevention.

38. NAVFACINST 11320.22D, Shore Activities Fire Protection Program.

39. OPNAVINST 5100.12 Series, Traffic Safety.

40. Compressed Gas Association (CGA) Pamphlet P-1, Safe Handling of Compressed Gases in Containers. Compressed Gas Association, 1236 Jefferson Davis Hwy, Arlington, VA 22202.

41. "SPAWARHQ Supplemental Safety Rules."